

## PATENT COOPERATION TREATY

PCT

## NOTIFICATION OF ELECTION

(PCT Rule 61.2)

From the INTERNATIONAL BUREAU

To:

Commissioner  
 US Department of Commerce  
 United States Patent and Trademark  
 Office, PCT  
 2011 South Clark Place Room  
 CP2/5C24  
 Arlington, VA 22202  
 ETATS-UNIS D'AMERIQUE

in its capacity as elected Office

<b>Date of mailing (day/month/year)</b> 26 February 2001 (26.02.01)	
<b>International application No.</b> PCT/GB00/02709	<b>Applicant's or agent's file reference</b> FEMI/P23179PC
<b>International filing date (day/month/year)</b> 14 July 2000 (14.07.00)	<b>Priority date (day/month/year)</b> 15 July 1999 (15.07.99)
<b>Applicant</b> FILSHIE, Marcus et al	

1. The designated Office is hereby notified of its election made:



in the demand filed with the International Preliminary Examining Authority on:

10 January 2001 (10.01.01)



in a notice effecting later election filed with the International Bureau on:

2. The election ☒ was

was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

<b>The International Bureau of WIPO</b> 34, chemin des Colombettes 1211 Geneva 20, Switzerland	<b>Authorized officer</b>  Zakaria EL KHODARY
Facsimile No.: (41-22) 740.14.35	Telephone No.: (41-22) 338.83.38

## PATENT COOPERATION TREATY

PCT


REC'D 25 OCT 2001

WIPO PCT

## INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

14

Applicant's or agent's file reference FEMI/P23179PC	<b>FOR FURTHER ACTION</b> See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/GB00/02709	International filing date (day/month/year) 14/07/2000	Priority date (day/month/year) 15/07/1999
International Patent Classification (IPC) or national classification and IPC A61B17/122		
Applicant FEMCARE LIMITED et al.		
<p>1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 6 sheets, including this cover sheet.</p> <p><input checked="" type="checkbox"/> This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).</p> <p>These annexes consist of a total of 9 sheets.</p>		
<p>3. This report contains indications relating to the following items:</p> <ul style="list-style-type: none"><li>I <input checked="" type="checkbox"/> Basis of the report</li><li>II <input type="checkbox"/> Priority</li><li>III <input type="checkbox"/> Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</li><li>IV <input type="checkbox"/> Lack of unity of invention</li><li>V <input checked="" type="checkbox"/> Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</li><li>VI <input type="checkbox"/> Certain documents cited</li><li>VII <input checked="" type="checkbox"/> Certain defects in the international application</li><li>VIII <input checked="" type="checkbox"/> Certain observations on the international application</li></ul>		
Date of submission of the demand  10/01/2001	Date of completion of this report  23.10.2001	
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized officer  Küster, G  Telephone No. +49 89 2399 7240	



# INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/GB00/02709

## I. Basis of the report

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

### Description, pages:

6	as originally filed	
1-5,7,8	with telefax of	01/10/2001

### Claims, No.:

1-3	with telefax of	01/10/2001
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### Drawings, sheets:

1/5-4/5	as originally filed	
5/5	with telefax of	01/10/2001

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

# INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/GB00/02709

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
- ☒ the claims, Nos.: 4
- ☐ the drawings, sheets:

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

*(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)*

6. Additional observations, if necessary:

## V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes:	Claims	1-3
	No:	Claims	none
Inventive step (IS)	Yes:	Claims	1-3
	No:	Claims	none
Industrial applicability (IA)	Yes:	Claims	1-3
	No:	Claims	none

2. Citations and explanations  
**see separate sheet**

## VII. Certain defects in the international application

The following defects in the form or contents of the international application have been noted:  
**see separate sheet**

## VIII. Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:  
**see separate sheet**

**Re Item V**

**Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

Insofar as the claims can be understood in view of the clarity problems (see section VIII. below), the following is observed:

1. Independent **claim 1** appears to meet the requirements of the PCT in respect of novelty (Article 33(2) PCT) and inventive step (Article 33(3) PCT), the reasons being as follows:

Document GB-A-2 177 748 (D2) cited in the ISR discloses a surgical clip comprising the features of the preamble of claim 1. The subject-matter of claim 1 differs from the clip according to D2 in that the upper jaw comprises a first substantially straight section and a second arcuate shaped section with two portions, wherein the first portion adjacent to said substantially straight section has a greater radius of curvature than the second portion.

The problem to be solved by the present invention may be regarded as to improve the deformation characteristics of the upper jaw during closure of the clip (cf. p. 6 I. 15-20 of the present application).

The problem is solved by providing the two portions (641, 644) with different radii of curvature, wherein the portion (644) opposite the hinge has a smaller radius. This reduces the risk of the upper jaw not to be latched under the latching lip (626) of the lower jaw when the clip is closed (cf. p. 8 I. 19-23 of the present application).

Document US-A-5 219 353 (D1) cited in the ISR discloses a clip where the upper jaw comprises a first substantially straight section and a second arcuate shaped section. It is noted that although the clip in D1 is not provided with a rubber lining, this feature is a common measure in the field. An arcuate shaped section comprising two portions with different radii of curvature is however not rendered obvious by D1.

2. **Claims 2 and 3** are dependent on claim 1 and as such also meet the requirements of the PCT with respect to novelty and inventive step.

**Re Item VII**

**Certain defects in the international application**

1. Contrary to the requirements of Rule 6.2(b) PCT, the features of the claims are not provided with reference signs placed in parentheses.
2. Contrary to the requirements of Rule 10.2 PCT, the reference signs are not consistent throughout the application:  
Reference numeral "640" is incorrectly used on p. 7 l. 6 for the straight portion of the **lower** jaw, since this numeral has already been used to denote the first substantially straight portion of the **upper** jaw (see fig. 6 and p. 7 l. 10). Contrary to Rule 11.13(I) PCT, the straight portion of the lower jaw is also not indicated in the figures (see in particular fig. 6).  
The reference sign "646" on p. 7 l. 7 is incorrect and should have been replaced by "624".

**Re Item VIII**

**Certain observations on the international application**

1. Contrary to the requirements of Rule 10.2 PCT, the terminology is not consistent between the claims and the description. This inconsistency furthermore leads to a lack of clarity of the claims (Article 6 PCT).

In **claim 1** the second arcuate shaped section is defined to comprise a "first portion" and a "second portion", whereas in the description on p. 7 l. 9-12 these portions are referred to as "a second arcuate portion" and "a third arcuate portion", respectively.

Moreover the expression "at an **opposite** end of said first portion to said substantially straight section" (emphasis added) is grammatically not clear.

The above problems could have been removed by rephrasing claim 1 as follows:  
"... characterised in that the upper jaw comprises a complex shape comprising a first substantially straight section (640) adjacent to the hinge, a second arcuate portion (641) adjoining the substantially straight section and a third arcuate portion

(644) adjacent to said second portion (641) at an end of said second portion opposite to said substantially straight section (640), said second portion (641) having a first radius of curvature (RX) substantially greater than the radius of curvature of said third portion (644) which has a second radius of curvature (RY)" (cf. p. 7 l. 9-12 and fig. 6).

Analogously, the term "a third generally straight section" in **claim 2** is not consistent with the term "a fourth substantially straight section" on p. 7 l. 12 in the description.

2. Dependent **claim 2** is not clear, since the term "the arcuate section" seems to exclude a "generally straight section" being comprised therein. This problem could have been removed by replacing the expression "in which the arcuate section comprises" by "in which the upper jaw (642) comprises" in claim 2 (cf. p. 7 l. 9-12).

In analogy to point 1. above, the expression "at the opposite end of said second portion to the hinge" in claim 2 is not clear. This could have been remedied by rephrasing the expression as follows: "at the end of said second portion opposite to the hinge".

Furthermore, the expression "the latching **section**" (emphasis added) in claim 2 lacks antecedence (cf. claim 1: "latching **means**").

3. The embodiment of the invention described on p. 5 l. 1 - p. 7 l. 2 and shown in figures 1-5 does not fall within the scope of the claims. The embodiment concerned does not describe a clip wherein the arcuate shaped section comprises two portions having different radii of curvature (cf. p. 5 l. 11-13, p. 6 l. 3-13 and l. 27-30).

This inconsistency between the claims and the description leads to doubt concerning the matter for which protection is sought, thereby rendering the claims unclear (Article 6 PCT). The inconsistency could have been removed by indicating in the description that the embodiment concerned does not form part of the invention but is useful for understanding the invention (see the PCT Guidelines, III-4.3).

With reference to Figure 1, a clip 10 according to the present invention is shown in side elevation.

- 5 The clip comprises an upper jaw section 12 and a lower jaw section 14. The lower jaw section 14 has a latch portion 16 at one end a hinge portion 18 at the other end.

The upper jaw 12 is hinged by a hinge pin 20 to the lower jaw.

10

The upper jaw 12 comprises at least two shaped sections. A first section 120 comprises a relatively straight short section and the second section 122 comprises a relatively gently curved section.

- 15 A third section 124 comprising a co-operating latch portion may be provided at the end of the upper jaw opposite to the hinge 18.

In a practical clip (see Figure 2) one or both jaws 12, 14 will be provided with a silicone rubber lining but this is not shown in Figure 1 for ease of  
20 viewing.

The jaw 12 is shown in a second position 12' to illustrate movement of the jaw which is further illustrated in Figure 2.

- 25 By way of contrast, a known sterilisation clip 30 (the Filshie clip) is shown in Figure 1 having a bottom jaw 34 and top jaw 32 and using the same hinge 18. The latch portion 36 can be seen to be substantially nearer to the hinge 18 than the latch portion 16 of the clip according to the present invention.

30



Figure 1 shows an enlarged side elevation view of a first clip in accordance with the present invention, the figure also showing by way of comparison a side elevation view of a known sterilisation clip;

5

Figure 2 shows diagrammatically a longitudinal cross-section of a part of an applicator illustrating the portion of the clip of the present invention in a magazine section of the application and also in the operable position in which position the clip is closed, as illustrated,

10

Figures 3 to 5 diagrammatically illustrate the advantageous design of the clip of the present invention during closure,

15

Figure 6 shows an enlarged side elevation view of a second clip in accordance with the present invention,

20

Figure 7 shows a cross sectional view on line 'A-A' of Figure 6 illustrating the cross sectional shape of the silicone rubber lining of the upper jaw of the clip,

25

Figure 8 shows a cross sectional view on line 'B-B' of Figure 6 illustrating the cross sectional shape of the silicone rubber lining of the lower jaw of the clip,

Figure 9 shows a detail of the end, closure section of the upper jaw of the clip of Figure 6 and

30

Figure 10 shows the upper jaw of the clip of figure 6 in greater detail.

and thirdly to be able to be lockable by the applicator to effect closure of a blood vessel. A mere enlargement of existing clip design may not achieve a satisfactory locking procedure for the enlarged clip.

- 5 It is an object of the present invention to provide a surgical clip which can occlude larger structures and also which can preferably be inserted into a narrow applicator for subsequent insertion down a narrow cannula.

10 In a specific example the cannula can be less than 7mm in diameter and in a preferred example it can be less than 5mm in diameter.

The present invention provides a surgical clip, the clip comprising an elongate upper jaw and an elongate lower jaw attached together at a first hinge end, the lower jaw being provided with latching means at an  
15 opposite end to the hinge, the jaws being provided with a silicone rubber lining on either the upper or lower jaw, or both, and in which the upper jaw comprises a complex shape comprising a first substantially straight section adjacent to the hinge and a second arcuate shaped section adjoining the straight section.

20

In a preferred embodiment, the arcuate section comprises a third generally straight section adjacent to said curved section at the opposite end of the upper jaw to the large section said substantially straight section, when in the closed position of the clip interlocking under the latching section of the  
25 lower jaw.

Embodiments of the present invention will now be described, by way of example with reference to the accompanying drawings in which:

The increased effectiveness in dealing with larger structures will mean that the simpler clipping technique can be used instead of ligature sutures that require a longer training curve and take longer to apply thus simplifying the equipment required.

5

In addition the increased effectiveness of clipping means that only the smallest number of clips required needs to be used; this will reduce the degree of intervention necessary.

10 The dedicated applicator is designed in relation to the clip and is disclosed in co-pending application No....

The clip is designed to be able to be loaded into the magazine of the applicator shaft (in multiples of two to ten). The applicator shaft or barrel  
15 incorporating different multiples of clips may be disposable.

The geometry of the upper jaw of the clip is critical when having to occlude anatomical structures greater than 5mm in diameter. The upper jaw must be able to withstand deformation whilst occluding a structure  
20 until the upper jaw is safely within the confines of the latch (opposite end to the hinge).

In addition the geometry of the upper jaw also allows for the increased capacity for occlusion that is necessary when occluding larger structures.

25

If the cannula can be made to a large diameter then the design of the clip can be relatively simple but as the diameter of the cannula is reduced then the clip design must be more complex in order to be able to provide an elongate magazine to enable the clips firstly to be fed down the cannula,  
30 secondly to be able to be openable once it has emerged from the magazine

SURGICAL CLIP

PTO/PCT Rec'd 15 JAN 2002

The present invention relates to surgical clips and more particularly to ligation clips.

5

During surgical procedures, it is often necessary to use several ligation clips. These can be inserted individually into a suitable applicator, but is more efficient if several clips can be loaded into an applicator preferably in a replaceable magazine.

10

The present invention has for a first object to provide a clip in particular suitable as a ligation clip which can be loaded into a relatively narrow diameter magazine for delivering such clips down a tube which may be inserted down a cannula.

15

During surgical procedures, ligation clips can be extensively used; several may be applied to various anatomical structures in the course of one operation.

20 State of the art clips are limited to the use on anatomical structures up to 5mm in diameter after which their effectiveness becomes impaired.

It is the object of this invention to provide a ligation clip that can be used on anatomical structures up to and in excess of 5mm in diameter.

25

In particular, the object of the invention is to provide a surgical clip that can be loaded into a dedicated applicator (incorporating a magazine) for delivery down a narrow cannula.

until the end portion 124 (Fig 1) has been depressed towards the lower jaw 14.

Figure 6 shows an alternative design clip 60 comprising a lower jaw 622 and an upper jaw 642. As in Figure 1 the lower jaw comprises a hinge portion 620 an elongate relatively straight portion 622 and a latch portion 624.

The upper jaw 642 comprises four separate straight and arcuate sections. A first substantially straight portion 640, a second arcuate portion 642 having a radius RX (Figure 10) and a third arcuate portion 646 having a radius RY (Figure 10) and a fourth substantially straight section 646.

At the distal end from hinge section 620 the portion 646 is provided to latch under lip 626.

The clip 60 is preferably lined with silicone rubber linings 628 and 648 respectively attached to the lower and upper jaws 622, 642.

The profiles of the linings 628, 648 are shown respectively in Figures 7 and 8 and comprise a sinusoidal shape on the internal surface. This shape provides the desired property of the silicone rubber lining of being able to grip the vessel to be occluded whilst still being able to exert the necessary occlusion force when the clip has been closed.

With reference now to Figure 9 the end section 646 (Fig 6) of the upper jaw comprises a relatively short straight section and the silicone rubber lining is provided with a tongue 6480 which is relatively thin in comparison with the rest of the lining 648.

The tongue 6480 serves to initially capture the vessel to be occluded providing in effect an extension to the upper jaw. Because the tongue 6480 is relatively thin it is readily squashed into the silicone rubber lining 628 of the lower jaw thereby not preventing closure of the clip.

5

With reference now to figure 10 in order to effect satisfactory closure of the clip whilst allowing the clip to pass down a relatively small diameter tube the upper jaw of the clip is provided with a first substantially straight portion 640 at the proximal end nearest the hinge as in the embodiment of

10 Figure 1.

In this embodiment the upper jaw is then provided with two arcuate sections 642 and 644.

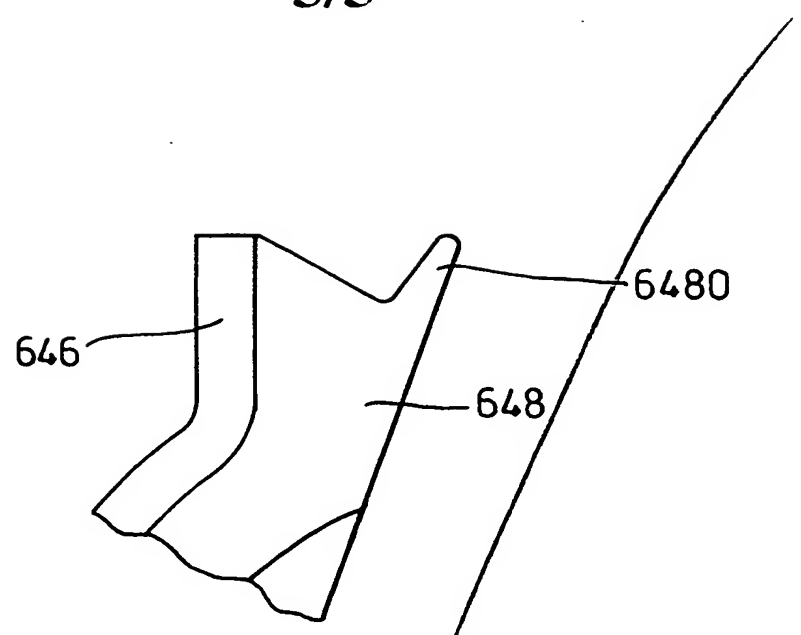
15 Arcuate section 642 has a radius of curvature  $R_X$  much larger than that of section 644 ( $R_2$ ). In a specific embodiment the radius of arcuate of  $R_X$  is 11.9mm and that of  $R_Y$  is 4.6mm.

20 The use of two different radii in combination with the straight section allows the clip in this embodiment to be fed down a small diameter tube in a semi closed position to be openable at the end of the tube and to then be latched without risk of the upper jaw being distorted when the latching pressure is applied.

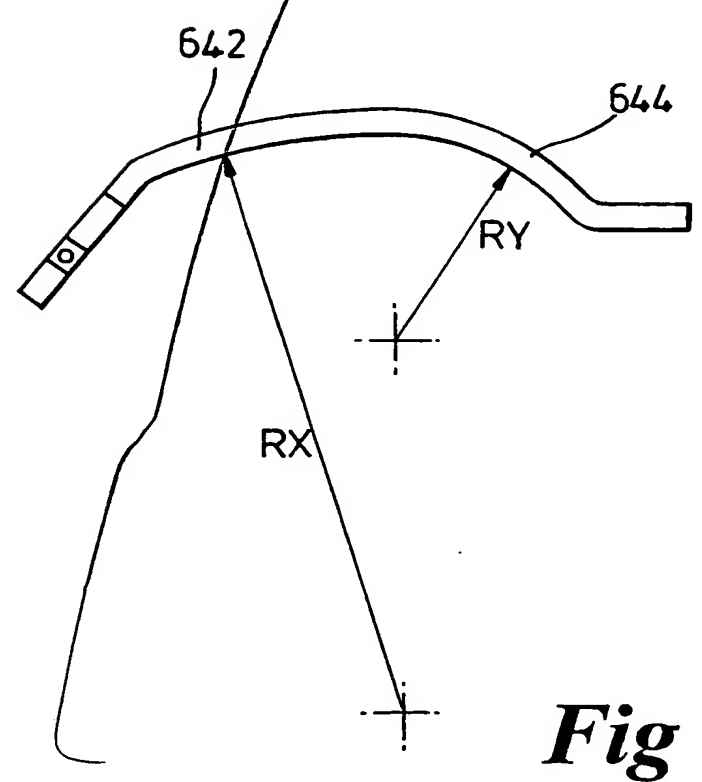
CLAIMS

1. A surgical clip, the clip comprising an elongate upper jaw and an elongate lower jaw attached together at a first hinge end, the lower jaw being provided with catching means at an opposite end to the hinge, the jaws being provided with a section rubber lining on either the upper or lower jaw, and in which the upper jaw comprises a complex shape comprising a first substantially straight section adjacent to the hinge and a second arcuate shaped section adjoining the straight section.
2. A surgical clip as claimed in Claim 1, in which the arcuate section comprises a third generally straight section adjacent to said curved section at the opposite end of the upper jaw to the large section said generally straight section, when in the closed position of the clip interlocking under the latching section of the lower jaw.
3. A surgical clip as claimed in claim 1 or claim 2 on which the second arcuate shaped section comprises a first portion adjacent to said substantially straight section and a second portion adjacent to said first portion at an opposite end of said first portion to said substantially straight section said first portion having a first radius of curvature substantially greater than said second portion which has a second radius of curvature.
4. A surgical clip as claimed in claim 3 in which said first radius of curvature is of the order of three times that of the second radius of curvature.

5/5



**Fig. 9**



**Fig 10**



## PCT

## INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference <b>FEMI/P23179PC</b>	<b>FOR FURTHER ACTION</b> see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.	
International application No. <b>PCT/GB 00/ 02709</b>	International filing date (day/month/year) <b>14/07/2000</b>	(Earliest) Priority Date (day/month/year) <b>15/07/1999</b>
Applicant <b>FEMCARE LIMITED</b>		

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 4 sheets.

☒ It is also accompanied by a copy of each prior art document cited in this report.

## 1. Basis of the report

- a. With regard to the **language**, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

- b. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international search was carried out on the basis of the sequence listing :

☐ contained in the international application in written form.

☐ filed together with the international application in computer readable form.

☐ furnished subsequently to this Authority in written form.

☐ furnished subsequently to this Authority in computer readable form.

☐ the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

☐ the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

2. ☐ **Certain claims were found unsearchable** (See Box I).

3. ☐ **Unity of Invention is lacking** (see Box II).

4. With regard to the **title**,

☒ the text is approved as submitted by the applicant.

☐ the text has been established by this Authority to read as follows:

5. With regard to the **abstract**,

☐ the text is approved as submitted by the applicant.

☒ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the **drawings** to be published with the abstract is Figure No.

☒ as suggested by the applicant.

☐ because the applicant failed to suggest a figure.

☐ because this figure better characterizes the invention.

1  
☐ None of the figures.

# INTERNATIONAL SEARCH REPORT

International Application No

PCT/GB 00/02709

**A. CLASSIFICATION OF SUBJECT MATTER**  
IPC 7 A61B17/122

According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 A61B A61F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	GB 2 177 748 A (FEMCARE LIMITED) 28 January 1987 (1987-01-28) the whole document ---	1,2
Y	US 5 219 353 A (GARVEY, III ET AL.) 15 June 1993 (1993-06-15) column 4, line 14-44; figures ---	1,2
A	GB 2 226 958 A (FEMCARE LIMITED) 18 July 1990 (1990-07-18) abstract; figures ---	1
A	US 3 270 745 A (WOOD) 6 September 1966 (1966-09-06) column 4, line 46-63; figures 21-24 --- -/--	1

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

\* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search

12 September 2000

Date of mailing of the international search report

19/09/2000

Name and mailing address of the ISA

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Authorized officer

Giménez Burgos, R

# INTERNATIONAL SEARCH REPORT

International Application No

PCT/GB 00/02709

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	<p>FR 2 709 944 A (CUILLERON)  24 March 1995 (1995-03-24)  abstract; figures</p> <p>-----</p>	1

# INTERNATIONAL SEARCH REPORT

information on patent family members

International Application No

PCT/GB 00/02709

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
GB 2177748	A	28-01-1987	CA 1287538 A DE 3623023 A FR 2584602 A	13-08-1991 15-01-1987 16-01-1987
US 5219353	A	15-06-1993	AU 3802493 A DE 69325089 D DE 69325089 T DE 627896 T EP 0627896 A JP 8501223 T US 5354306 A WO 9316645 A	13-09-1993 01-07-1999 18-11-1999 30-11-1995 14-12-1994 13-02-1996 11-10-1994 02-09-1993
GB 2226958	A	18-07-1990	GB 2190297 A, B	18-11-1987
US 3270745	A	06-09-1966	NONE	
FR 2709944	A	24-03-1995	NONE	

# INTERNATIONAL SEARCH REPORT

International application No.

PCT/GB 00/ 02709

**B x III** TEXT OF THE ABSTRACT (Continuation of item 5 of the first sheet)

The abstract is changed as follows:

Line 1+2: after "upper jaw" insert "(12)";  
line 1: after "lower jaw" insert "(14)";  
line 3+7: after "straight section" insert "(120)";  
line 3+7: after "curved section" insert "(122)".